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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/020,693	12/14/2001	Karla M. Robotti	10981377-4	3398

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AGILENT TECHNOLOGIES, INC.  
Legal Department, DL429  
Intellectual Property Administration  
P.O. Box 7599  
Loveland, CO 80537-0599

EXAMINER

GORDON, BRIAN R

ART UNIT	PAPER NUMBER
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1743

DATE MAILED: 07/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/020,693

Applicant(s)

ROBOTTI ET AL.

Examiner

Brian R. Gordon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 5-15-06.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 37-43, 46, 47 and 49-77 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 37-43, 46-47, 49-50, 52-69, and 71-74, 77 is/are rejected.
- 7) ☒ Claim(s) 51, 70, 75 and 76 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on May 15, 2006 has been entered.

### ***Response to Amendment***

Applicant's arguments filed May 15, 2006 have been fully considered but they are not persuasive. Applicant asserts Takauchi et al. does not teach the phase reversible material and surface are component being located within a fluid flow path. The examiner disagrees, for as exemplified in Figure 3 the membrane containing the phase reversible material is positioned in a fluid flow path, hence both the membrane (high surface area component) containing the phase reversible material may be placed in a fluid flow path.

As to applicant's arguments directed to the use of the membrane of Takauchi. It has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. Furthermore as to the opening and closing and this argument is not commensurate in scope with that of the claims for

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there is no mentioning of the device opening and closing. It's on required that the device comprise a phase reversible material.

For reasons given herein the previous rejections are hereby maintained.

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 74 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. The term "about" in claim 74 is a relative term which renders the claim indefinite. The term "about 50  $\mu$ m long" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. It is unclear what one considers to be within the accepted range to be considered "about". How much less or more than 50  $\mu$ m does one consider to still fall within the range of "about"?

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 37-43, 46-47, 49-50, 52-53, 56-58, 61-69, 71-72, 74 are rejected under 35 U.S.C. 102(b) as being anticipated by Takauchi et al. US 5,453,333.

Takauchi et al. discloses a porous membrane of a single layer structure formed from a first polymer having a melting point of at least 130 degree C and a second polymer having a melting point of up to 120 degree C, wherein the walls of the pores of the membrane have an amount of second polymer insufficient to block the permeability of the pores under normal operating temperature conditions yet sufficient to do so when the membrane reaches a temperature equal to or greater than the second polymer's melting point.

The second polymer is considered to be equivalent to applicants phase reversible material stably associated and retained on a high surface area within the pores of the membrane. The membrane functions as a valve in the configuration of Figure 3 functioning to control the flow via heat actuation and mixing of the fluids separated in the compartment by the membrane.

As to claim 74, the membrane is exemplified at being 15 to 200  $\mu\text{m}$ . However it would have been obvious on of ordinary skill in the art to recognize the membrane may be manufactured to a smaller size.

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 54-55, 59-60, 73, and 77 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takauchi et al as applied to claims 37-43, 46-47, 49-50, 52-53, 56-58, 61-69, 71-72, and 74 above, and further in view of Hooper et al. US 5,569,364.

Takauchi does not disclose the second polymer as being N-isopropylacrylamide.

As admitted by applicant, smart gels are conventional and well-known in the art. Furthermore, Hooper et al. discloses gel particles can be prepared by inverse suspension, precipitation and suspension polymerization. These particles can be swollen and collapsed by small changes in temperature, pH, and ionic strength of

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solvent. Other approaches involve the formation of reversible cross-links by use of polyelectrolyte complexes, chelating agents or copolymers of hydrophobic and hydrophilic repeat units. Finally, reversibly solubilized systems may be used to change the viscosity of the media. Hooper provides a list of improved microgels including poly(N-isopropylacrylamide) which may be employed for separation.

It would have been obvious to one of ordinary skill in the art at the time of the invention to employ the improved microgels as taught by Hooper et al. as the second polymer within the device of Takauchi in order to ensure the proper separation of the fluids is maintained within the compartment.

As to claim 73, the patent does not mention the polymer being covalently bonded. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to recognize the polymer material would be covalently bonded to the membrane.

As to claim 77 the patent discloses the cross section of the porous membranes of the present invention has a single layer structure. The membrane has a body extending a length and breadth dimension desired to provide the needs of its end use. Hence it would have been obvious to recognize the membrane may be manufactured to fit a cross section as specified.

#### ***Allowable Subject Matter***

10. Claim 51, 70, and 75-76 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. The following is a statement of reasons for the indication of allowable subject matter: The prior art does not teach nor fairly suggest the high surface area component comprises an array of posts bonded to said at least one surface of said flow path or mechanical element.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian R. Gordon whose telephone number is 571-272-1258. The examiner can normally be reached on M-F, with 2nd and 4th F off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on 571-272-1267. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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